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1967 Grain Sorghum Performance Trials

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CIRCULAR 184 JANUARY 1968

1967 GRAIN SORGHUM PERFORMANCE TRIALS

AGRONOMY DEPARTMENT
AGRICULTURAL EXPERIMENT STATION
SOUTH DAKOTA STATE UNIVERSITY, BROOKINGS

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The primary purpose is to supply interested individuals with information on the relative performance of the hybrids entered, when grown under similar environmental conditions. Records of performance of the grain sorghum hybrids harvested in 1967 as well as two-, three-, four-, and five-year averages of yield and moisture percentages are presented where available. The trials reported in the circular have been under the supervision of Crop Performance Testing, Agricultural Experiment Station.

Location of the 1967 Trials

The crop adaptation areas in which the trials were located are based upon differences in soil type, elevation, temperature, rainfall and other physical differences. The exact location of these trials and dates of seeding and harvesting are reported in Table 1. Data from soil samples taken at the various sites prior to or at time of seeding are presented in Table 2.

Weather and Climatic Conditons

Climatic data for the 1967 grain sorghum growing season are based upon Monthly Climatological Data, U. S. Department of Commerce and from reports of the substation superintendents at the Northeast and South Central Research Farms. These data are presented in Table 3. No precipitation data are presented for the Geddes site as the nearest weather stations are Platte and Pickstown. The temperatures presented are from Pickstown reports.

The first grain sorghum trial was seeded May 17 and seeding was concluded on May 26. Soil moisture was quite variable. Soil temperatures at the 4-inch depth had been at 70° F. for four days prior to the time planting began. The week after seeding was completed temperatures dropped and excessive precipitation was reported at all locations. June rainfall was far above normal at most locations and temperatures remained below normal throughout the crop season.

By nature, sorghum is a tropical crop. A glance at the weather data briefly sums up most of the problems encountered in many areas in 1967; delayed germination, poor

The assistance of the following named individuals is acknowledged: A. O. Lunden of the Agronomy Department; Substation supervisors Bernard Beer, Albert Dittman, Lloyd Dye, Jake Fredrikson, Harry Geise, Frank Holmes, Quentin Kingsley, Herb Lund, and Burton Lawrensen; and farmer-cooperator Maynard Bridges.

TABLE 1. THE LOCATION OF TRIALS AND DATES OF SEEDING AND HARVESTING OF GRAIN SORGHUM PERFORMANCE TRIALS, SOUTH DAKOTA, 1967

County	Location and post office	Date seeded	Date harvested
Brookings	Agronomy Farm, 1E, Brookings	May 25	October 11
Charles Mix	Maynard Bridges Farm, 1N, Geddes	May 17	October 10
Clay	Southeast Research Farm, Beresford	May 23	October 9
Codington	Northeast Research Farms, Watertown	May 26	October 2
Hyde	Central Substation, Highmore	May 25	October 6
Jackson	Range Field Station, Cottonwood	May 24	October 5
Lyman	South Central Research Farm, Presho	May 24	October 12
McPherson	North Central Substation, Eureka	May 25	October 3
Spink	Redfield Development Farm, Redfield	May 26	October 4

stands and slow growth prevented some varieties from heading and flowering until late September. Many grain yields were low and of poor quality.

Temperatures near or above 100° were very uncommon and were not detrimental to growth in 1967. At most locations the average mean temperatures were below normal every month of the crop season. The first killing frost was recorded at most locations on September 27. Scattered areas in the northeastern portion of South Dakota had frost damage on August 18 but the trial sites escaped injury. The cool temperatures delayed heading and pollination at least two to three weeks at most locations.

Hybrid Entry Procedure

Grain sorghums offered for sale in South Dakota or being produced for distribution in 1968 were eligible for entry. A closed-pedigree hybrid was entered by the permanent name and number under which it was sold by the parent company only. Varieties entered maintained minimum laboratory germination of 80 percent as required by

TABLE 2. SOIL CLASSIFICATION, LABORATORY ANALYSES OF SOIL SAMPLES TAKEN PRIOR TO SEEDING GRAIN SORGHUM TRIALS AND FERTILIZER APPLIED FOR 1967 CROP YEAR

Location and area	Soil classification	Laboratory analysis org. mat. %	P lbs/A	K lbs/A	pH	Fertilizer applied method	N lbs/A	P lbs/A
Brookings, D3	Vienna loam	3.5	117	250	7.2	plowed down	54	11
Charles Mix, C2	Reliance si cl loam	2.9	16	533	6.9	disced under	90	10
Clay, E	Kranzburg si cl loam	3.4	35	533	6.6	plowed down	60	17
Codington, D2	Kranzburg silt loam	4.3	41	314	6.7	plowed down	60	17
Hyde, B2	Williams loam	2.3	61	420	6.9	disced under	30	7
Jackson, B3	Pierre clay	2.1	41	533	6.6	fallowed in 1966		
Lyman, B3	Pierre clay	3.8	16	533	7.5	disced under	40	17
McPherson, B2	Williams loam	3.8	70	533	7.7	disced under	32	17
Spink, C1	Beotia-Harmony si cl lm	3.4	43	662	7.0	disced under	150	15

South Dakota Certification Standards. A nominal fee was charged for each entry in each area except grain sorghum developed by State and Federal Experiment Stations and entered by the South Dakota Agricultural Experiment Station.

Experimental Procedure

Each trial consisted of four replications and within each replication plots of individual entries were randomly located. All trials except Brookings were seeded, 2 rows at a time, with a cone planter mounted above runner-type planter units. Row spacing was 40-inch rows in all trials except the irrigated Redfield trial where the spacing was 21 inches. The plots were 2 rows wide and row lengths varied with range dimensions at each location.

The harvested grain was taken from two ten-foot sections of each row in each individual plot. The heads were placed in cloth bags as harvested, identified, returned to the Main Station and allowed to air dry in a pole shed for several weeks. Prior to threshing the bags were placed in driers for several days. Yields were calculated on the basis of pounds per acre. Three replications were harvested for yield determinations and the fourth left for observation purposes.

Moisture determinations on the grain made just prior to the normal first-frost date are generally more reliable and informative than determinations made at harvest time. These figures and the test weight of the grain indicate the maturity of the grain more realistically.

A route was established and moisture samples were to be taken at all sites from September 18 through 20. Ten to twelve heads, enough for a 400-500 gram sample, were cut from each entry, placed in a polyethylene bag, tagged and sealed tightly. Upon returning to the Main Station the samples were threshed, cleaned and moisture percentages determined with an electronic moisture meter. The upper limit of the meter is 35 percent moisture. Material above this level is indicated as 35.1+ in the tables and normally would indicate material of late maturity for this area. At Eureka, Watertown and Brookings all samples were above 35 percent moisture when sampled. Rain at the time the Cottonwood and Presho stops were to be made prevented sampling at these sites and a return trip could not be rescheduled.

At locations where bird damage has been serious, a bird repellent was used. The repellent is not harmful to the birds but is bitter to the taste and discourages continual picking. Significant, but not critical, losses were observed at Highmore in spite of the repellent application. Seed and forage so treated is unfit for food or feed so treatment is limited to fields planted for seed production or experimental use.

Measurements of Performance

Variations in soil fertility, slope or stand may cause varieties of equal potential to yield differently. Mathematical determinations were made to determine whether yield differences were caused by variations in environment or were true varietal differences. Small yield differences have no significance. If the yields were found not to be statistically different, a notation, N. S., is shown under the table.

Where the trials were found to have statistically significant differences among mean yields an additional test, Duncan's Multiple Range Test, was run on the means at the five-percent level.

As an example of Duncan's Test, note in Table 6 that varieties accompanied by the same lower case letter under the right hand column are not statistically different in 1967 yields. As reported in this table, under prevailing environmental conditions, NK 133, Frontier Super 400 and all varieties in descending order through Paymaster Ex. 1036 were not statistically different from each other in yield. The above example holds true for all the tables having significant differences in 1967 yields.

Discussion of Results

Grain sorghums are widely grown in many areas of South Dakota which are too hot and dry for corn production. In 1967, drought conditions prevailed in the latter part of the growing season but temperatures were much below normal.

Precipitation was below normal in May and some seedbeds were nearly powder dry. Soil temperatures were most favorable for planting the week of May 22 and seeding was completed during that week. Cooler temperatures began the following week and germination was slow and erratic. This cool period coupled with excessive rainfall and cool temperatures that followed in June, plus continued cool temperatures the remainder of the season, resulted in stand losses and erratic results in many trials.

The most noteable exception was the irrigated trial at Redfield where some excellent yields were acheived. The trial received nearly double the amount of nitrogen originally intended. Normally, cool temperatures slow down the availability of nitrogen but because of the greater amount that was inadvertantly applied the young plants were able to progress normally, even with the cooler, wet climate. With the subsequent application of irrigation water during the drier periods of the season excellent yields were acheived.

The trial at the Southeast Farm also did quite well but maturity was delayeed. Temperatures wer not so far below normal as elsewhere and timely rainfall came during July and August. The original setback at this location came shortly after the seedlings emerged and water flooded the field several times in June.

Results at the remaining trial sites were discouraging, either because of poor stands or late development and limited precipitation. In one instance, a variety was just pollinating when the first frost occurred on September 27.

The Grain Sorghum Performance Trials are conducted under the Agronomy program in Crop Performance Testing, Agricultural Experiment Station. The trials were started in 1962 and during this period several entries have been included every year and not varied greatly in rank from year to year. In making selections of hybrids to plant, factors other than yield should also be considered. Several of these factors are standability, maturity, head type, quality, disease resistance, insect resistence and adaptability to combine harvesting.

A summary of entries tested and companies submitting them is presented in Table 20.

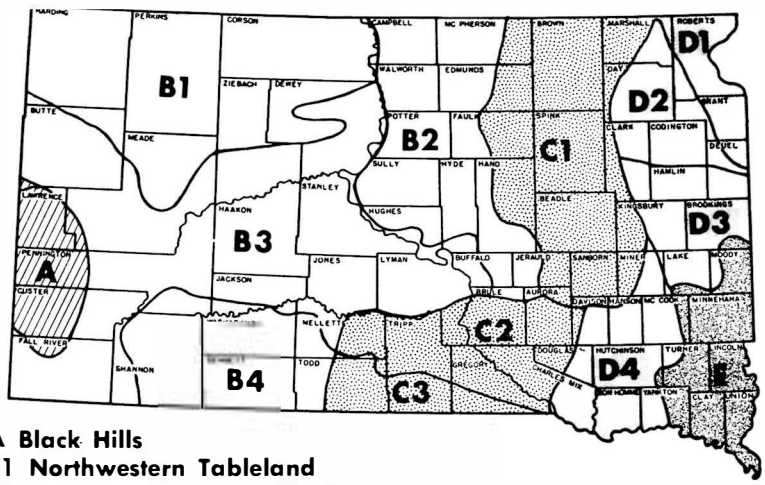
TABLE 3. TEMPERATURE AND PRECIPITATION DATA FOR THE 1967 GRAIN SORGHUM GROWING SEASON IN SOUTH DAKOTA

		Temperatures, degrees F			Precipitation, inches		
Location	Month	Mean average	Departure from normal	Average departure	Month total	Departure from normal	Total departure
Brookings	May	50.5	- 7.1		0.82	- 1.97	
1E	June	64.0	- 3.1		8.90	4.95	
	July	67.5	- 5.7		2.06	- 0.09	
Area D3	August	65.9	- 5.3		2.36	- 0.61	
	Sept.	57.9	- 3.4	- 4.9	0.66	- 1.37	0.91
					14.80		
	Last freeze 23° - May 20				First frost 29° - Sept. 24		
Pickstown	May	55.5					
	June	67.2					
Area C2	July	73.9					
	August	72.3					
	Sept.	64.6					
	Last freeze 31° - May 20				First frost 31° - Sept. 28		
Centerville	May	56.1			1.68		
6 SE	June	67.8			7.56		
	July	72.1			2.47		
Area E	August	69.4			3.37		
	Sept.	62.2			1.02		
					16.10		
	Last freeze 29° - May 9				First frost 29° - Sept. 27		
Watertown	May	49.8			0.69		
15N	June	62.8			4.58		
	July	66.2			1.05		
Area D2	August	66.4			1.13		
	Sept.	58.0			1.06		
					8.51		
	Last freeze 26° - May 20				First frost 22° - Sept. 27		
Highmore	May	51.8	- 5.4		0.68	- 1.65	
1W	June	64.1	- 2.7		7.80	4.26	
	July	71.5	- 3.0		1.43	- 0.55	
Area B2	August	70.8	- 2.0		1.95	- 0.09	
	Sept.	67.6	0.0	- 2.6	1.86	- 0.55	1.42
					13.72		
	Last freeze 28° - May 20				First frost 24° - Sept. 27		
Cottonwood	May	52.6	- 4.8		2.26	- 0.45	
2E	June	63.4	- 3.7		9.47	6.49	
	July	72.5	- 3.1		0.38	- 1.16	
Area B3	August	72.5	- 1.3		0.52	- 0.84	
	Sept.	63.6	0.6	- 2.4	1.73	0.71	3.33
					14.36		
	Last freeze 31° - May 15				First frost 22° - Sept. 27		

TABLE 3. continued

Location	Month	Temperature, degrees F: Mean average	Departure from normal	Average departure	Precipitation, inches: Month total	Departure from normal	Total departure
Presho	May	51.3			1.55		
IIS	June	64.6			5.11		
	July	71.8			0.53		
Area B3	August	70.9			2.90		
	Sept.	63.2			1.70		
					11.79		
	Last freeze 30° - May 20				First frost 28° - Sept. 27		
Eureka	May	51.8	- 4.3		0.91	- 1.68	
	June	63.0	- 2.0		4.67	0.84	
	July	68.0	- 4.4		1.82	- 0.63	
Area B2	August	68.7	- 2.0		0.86	- 1.55	
	Sept.	60.9	0.8		0.53	- 0.79	- 3.81
					8.79		
	Last freeze 32° - May 13				First frost 21° - Sept. 27		
Redfield	May	52.9			0.79		
6 E	June	65.1			5.77		
	July	70.3			0.80		
Area C1	August	69.3			1.02		
	Sept.	62.2			1.65		
					9.99		
	Last freeze 26° - May 20				First frost 26° - Sept. 27		

CROP ADAPTATION AREAS



A Black Hills
B1 Northwestern Tableland
B2 North Central Glacial Upland
B3 Pierre Plain
B4 Southwestern Tableland
C1 Northern James Valley
C2 South Central Upland
C3 South Central Tableland

D1 Northeast Lowland
D2 Northern Prairie Coteau
D3 Central Prairie Coteau
D4 Southern James Flatland
E Southeast Prairie Upland

TABLE 4. 1967 GRAIN SORGHUM PERFORMANCE TRIAL, AREA B2, NORTHCENTRAL SUBSTATION EUREKA

Variety	Height, inches	Test Wt.* lb/bu	Yield lb/A	Statistical significance
SD 503	41	47	2160	a
Pioneer X-5848	30	45	1920	ab
Nebr. 504	33	50	1810	abc
NK 120	33	47	1780	abc
DeKalb A-10	34	45	1730	bc
SD 451	37	52	1700	bc
NK 115	33	53	1690	bc
Frontier GX 482	34	37	1650	bcd
SD 102	34	53	1630	bcd
Sokota 445	33	46	1590	bcd
Haapala BL-101	35	53	1530	bcde
Pioneer 894	28	51	1510	bcde
NK 125	34	47	1500	bcde
Paymaster R 94	34	51	1480	bcde
SD 441	34	54	1410	cde
DeKalb B-32	35	44	1390	cde
Pawnee	35	53	1380	cde
Paymaster Ex. 1036	36	54	1380	cde
T-E 44C	33	51	1370	cde
T-E 44	30	28	1190	def
NK 133	34	29	1050	efg
Frontier Super 400	33	24	810	fgh
RS 610	37	25	700	fgh
Frontier 370	34	17	590	gh
Pioneer 885	36	19	550	gh
Frontier GX 402	32	24	520	h
		Mean	1380	

C.V. - 18.4%

TABLE 5. TWO-, THREE-, FOUR-, AND FIVE-YEAR AVERAGE YIELDS OF GRAIN SORGHUM HYBRIDS ENTERED IN THE AREA B2 TRIALS AT EUREKA, 1963-1967

Variety	Average yields, pounds per acre			
	1963-67	1964-67	1965-67	1966-67
DeKalb B-32		1170	1470	1730
Frontier S-400				1450
NK 115		1610	1780	2070
NK 120	2120	1700	1800	2070
NK 125	1760	1580	1730	1940
NK 133		1180	1520	1740
Pawnee		1280	1640	1920
Pioneer 885	1120	740	920	1200
T-E 44		1230	1520	1790
T-E 44C				1890
Nebr. 504			1760	2120
SD 441	1750	1460	1720	2020
SD 451	1480	1270	1490	1870
SD 503	1660	1310	1690	2180

TABLE 6. 1967 GRAIN SORGHUM PERFORMANCE TRIAL, AREA B3, CENTRAL SUBSTATION, HIGHMORE

Variety	Percent moisture	Test Wt. lb/bu	Yield, lbs/A	Statistical significance
NK 133	35.1+	56	4090	a
Frontier Super 400	35.1+	51	3970	ab
Frontier GX 482	34.9	54	3950	abc
RS 610	35.1+	53	3930	abcd
NK 120	20.9	58	3910	abcd
T-E 44	33.6	40	3890	abcd
NK 125	28.9	55	3780	abcd
Frontier 370	35.1+	44	3630	abcd
Frontier GX 402	35.1+	52	3630	abcd
Haapala BL-101	29.9	54	3620	abcde
DeKalb B-32	33.4	58	3570	abcdef
SD 451	29.9	56	3480	abcdefg
Pioneer 885	35.1+	54	3460	abcdefg
Paymaster Ex. 1036	34.9	56	3380	abcdefgh
Nebr. 504	35.1+	57	3260	bcdefghi
NK 115	23.2	55	3230	bcdefghi
Pawnee	24.9	56	3130	cdefghi
SD 102	35.1+	55	3060	defghi
DeKalb A-25	33.3	55	2700	efghi
Sokota 445	33.9	58	2670	fghi
Pioneer X-5848	30.7	55	2650	fghi
Pioneer 894	26.4	57	2620	ghi
Paymaster R 94	35.1+	56	2470	hi
SD 441	29.6	55	2400	i
SD 503	35.1+	55	2390	i
T-E 440	31.6	56	2370	i
		Mean	3280	

C.V. = 14.6%

TABLE 7. TWO-, THREE-, FOUR-, AND FIVE-YEAR AVERAGE YIELDS OF GRAIN SORGHUM HYBRIDS IN THE B2 TRIALS AT HIGHMORE, 1963-1967

Variety	Average yields, pounds per acre			
	1963-67	1964-67	1965-67	1966-67
DeKalb B-32		2770	3360	4070
Frontier Super 400				4170
NK 115		3100	3330	3670
NK 120	3250	3550	3820	4440
NK 125	3200	3340	3630	4250
NK 133		3240	3910	4620
Pawnee		2540	2980	3730
Pioneer 885	2760	3140	3740	4240
T-E 44		3240	3700	4360
T-E 44C				3130
Nebr. 504			3280	3780
SD 441	2690	2800	3100	3480
SD 451	3080	3250	3440	3800
SD 503	1830	2250	2800	3470

TABLE 8. 1967 GRAIN SORGHUM PERFORMANCE TRIAL, AREA B3, SOUTH CENTRAL RESEARCH FARM, PRESHO

Variety	Height, inches	Test Wt. lb/bu	Yield, lb/A	Statistical significance
SD 451	43	57	4420	a
NK 120	40	56	4040	ab
SD 441	48	57	4030	abc
Paymaster Ex. 1036	40	56	4000	abc
SD 530	46	56	3950	abc
T-E 44	37	42	3850	abcd
Nebr. 504	45	57	3690	abcde
DeKalb DD-50	43	51	3670	abcde
T-E 44C	43	58	3670	abcde
Advance 19	40	57	3660	abcde
NK 210A	40	50	3570	abcde
Frontier GX 402	37	43	3540	bcde
Haapala BL-101	43	56	3490	bcde
Advance 22	47	48	3490	bcde
NK 125	43	56	3400	bcde
T-E Grainmaster A	40	50	3400	bcde
Sokota 510	44	51	3370	bcde
Frontier 370	39	41	3360	bcde
NK 133	39	54	3340	bcde
Pioneer 885	41	47	3320	bcde
Pawnee	41	57	3310	bcde
Frontier GX 482	41	49	3220	bcde
Pioneer 894	33	58	3200	bcde
RS 610	44	51	3120	cde
Frontier GX 675	38	56	3110	cde
T-E Mucho	38	42	3100	cde
NK 222	37	50	2970	de
Frontier Super 400	39	45	2810	e
Paymaster R 102	41	48	2700	e
		Mean	3470	

C.V. 15.1%

TABLE 9. TWO-, THREE-, FOUR-, AND FIVE-YEAR AVERAGE YIELDS OF GRAIN SORGHUM HYBRIDS ENTERED IN THE AREA B3 TRAILS AT PRESHO, 1963-1967

Variety	Average yields, pounds per acre			
	1963-67	1964-67	1965-67	1966-67
Advance 22			3140	3960
Frontier Super 400				3650
NK 120	3570[a]	3390[a]		3340
NK 125	3190	3070	2850	3000
NK 133		3200	2990	3550
Pawnee		3050	2780	3490
Pioneer 885				3990
T-E 44		3260	3110	3500
T-E 44C				3570
Nebr. 504			3310	3950
RS 610	3380	3120	2960	3900
Sokota 510				4040
SD 451	3170	3220	3260	3920
SD 503	3730	3650	3700	3850

TABLE 10. 1967 GRAIN SORGHUM PERFORMANCE TRIAL, AREA C1, IRRIGATED, REDFIELD DEVELOPMENT FARM, REDFIELD

Variety	Height, inches	Percent moisture 9/18/67	Test Wt. lb/bu	Yield lbs/A	Statistical significance
NK 120	47	35.1+	56.0	9300	a
DeKalb B-32	47	35.1+	56.0	7890	b
NK 125	50	35.1+	56.0	7630	b
Pawnee	57	34.0	59.0	7500	bc
NK X4013	42	35.1+	57.0	7490	bcd
SD 441	56	33.2	58.0	7430	bcd
NK X4010	49	35.1+	56.0	7370	bcd
T-E 44	49	35.1+	48.0	7320	bcde
Haapala BL-101	51	35.1+	58.0	7260	bcdef
SD 451	56	35.1+	55.0	7260	bcdef
T-E 44C	53	35.1+	58.0	7150	bcdefg
NK 133	47	35.1+	52.0	7040	bcdefg
Pioneer X-5848	44	35.1+	48.0	6950	bcdefgh
SD 503	50	35.1+	55.0	6950	bcdefgh
NK 115	47	35.1+	57.0	6800	bcdefghi
Nebr. 504	45	35.1+	53.0	6800	bcdefghi
RS 610	52	35.1+	47.0	6700	bcdefghi
Sokota 445	44	35.1+	54.0	6690	bcdefghi
NK 222	46	35.1+	49.0	6650	bcdefghi
Pioneer 894	45	35.1+	56.0	6230	cdefghi
NK X4018	49	35.1+	52.0	6200	cdefghi
T-E Grainmaster A	48	35.1+	41.0	6110	cdefghi
Pioneer 885	47	35.1+	47.0	6060	defghi
Paymaster R 102	50	35.1+	47.0	5880	efghi
T-E Mucho	47	35.1+	45.0	5820	efghi
Ute	45	35.1+	52.0	5750	fghi
Frontier Super 400	48	35.1+	45.0	5670	ghi
NK 210A	50	35.1+	47.0	5660	ghi
Frontier 370	49	35.1+	42.0	5440	hi
DeKalb DD-50	52	35.1+	50.0	5310	ij
Frontier 375	48	35.1+	35.0	3800	j
			Mean	6650	

C.V. = 11.7%

TABLE 11. TWO-, THREE-, AND FOUR-YEAR AVERAGE YIELDS OF GRAIN SORGHUM HYBRIDS ENTERED IN THE AREA CI TRIALS AT REDFIELD, 1964-67

Variety	Average yields, pounds per acre		
	1964-67	1965-67	1966-67
DeKalb B-32	5300	5690	6160
Frontier 375			3810
Frontier Super 400			4910
NK 115	4800	5160	5380
NK 125	5090	5430	5580
NK 133	5250	5480	5510
NK 222		5140	5220
Pawnee	5550	5780	5870
Ute	4570	5050	5060
Pioneer 885	4930	4480	5400
T-E 44	5520	5610	5840
T-E 44C			5410
T-E Grainmaster A			5280
RS 610	5330	5470	5570
Nebr. 504		5560	5600
SD 451	5050	5390	5570
SD 503	5550	5650	5710

TABLE 12. 1967 GRAIN SORGHUM PERFORMANCE TRIAL, AREA D2, NORTHEAST RESEARCH FARMS, WATERTOWN UNIT

Variety	Height, inches	Test Wt.* lb/bu	Yield lbs/A	Statistical significance
SD 441	47	56	2260	a
NK 115	37	54	2110	ab
Pioneer X-5848	29	40	1700	c
NK 120	36	49	1700	c
Haapala BL-101	39	52	1610	c
SD 102	39	48	1540	c
Nebr. 504	38	43	1400	cd
NK 125	39	45	1360	cd
SD 503	38	48	1120	de
SD 451	39	45	1110	de
Paymaster Ex. 1036	37	49	1040	de
Pioneer 894	31	45	1010	de
DeKalb B-32	36	47	960	e
T-E 44C	38	47	960	e
Pawnee	39	34	910	ef
NK X 4010	37	39	730	efg
T-E 44	30	30	540	fg
NK 133	37	19	250	g
DeKalb DD-50	37	--a	--a	
		Mean	1240	

C.V.= 16.3%

* - all varieties were above 35% moisture in grain on 9/18/67

[a] - just pollinating at time of first frost

TABLE 13. TWO-, THREE-, FOUR-, AND FIVE-YEAR AVERAGE YEILDS OF GRAIN SORGHUM HYBRIDS ENTERED IN AREA D2 TRAIL AT WATERTOWN, 1963-1967

Variety	Average yields, pounds per acre			
	1963-67	1964-67	1965-67	1966-67
DeKalb B-32		1960	1970	1980
NK 115		2600	2540	2530
NK 120	2870	2480	2400	2460
NK 125	2680	2350	2170	2140
NK 133		2060	1800	1660
Pawnee		2170	2000	2020
Nebr. 504			2030	2200
SD 441	2670	2360	2440	2610
SD 451	2530	2150	2090	2250
SD 503	2780	2210	2120	2020
T-E 44C				2030

TABLE 14. 1967 GRAIN SORGHUM PERFORMANCE TRIAL, AREA D3, AGRONOMY FARM, BROOKINGS

Variety	Height, inches	Test Wt.* lb/bu	Yield lbs/A	Statistical significance
Frontier GX 482	37	49	5780	a
SD 451	43	55	4200	ab
Nebr. 504	40	55	4070	b
SD 441	50	57	4060	bc
NK 115	38	56	3830	bcd
T-E 44	37	40	3820	bcde
NK 125	44	52	3740	bcdef
SD 503	44	54	3730	bcdef
DeKalb B-32	40	50	3720	bcdefg
Pawnee	44	56	3710	bcdefg
Pioneer X-5848	34	53	3670	bcdefghi
Pioneer 894	35	57	3620	bcdefghij
Paymaster Ex 1306	42	52	3430	bcdefghijk
NK X4010	41	53	3350	bcdefghijk
NK 133	40	47	3220	bcdefghijk
T-E 44C	39	56	2850	bcdefghijkl
Frontier GX 625	36	58	2680	bcdefghijkl
NK 222	35	47	2230	cdefghijkl
DeKalb DD-50	40	45	2180	defghijkl
RS 610	39	39	2050	defghijkl
T-E Mucho	35	45	2040	defghijkl
Haapala BL-105	38	33	1930	efghijkl
Frontier 375	35	30	1800	fghijkl
Frontier GX 402	36	47	1760	ghijkl
Frontier 370	39	35	1720	hijkl
T-E Grainmaster A	40	46	1670	ijkl
Paymaster R-102	38	33	1610	jkl
Frontier Super 400	35	36	1490	kl
Frontier 400C	37	34	1140	kl
Frontier 401	36	42	820	l
		Mean	2860	

C.V. 35.8%

* - all varieties were above 35% moisture in grain on 9/18/67

TABLE 15. TWO-, THREE-, FOUR-, AND FIVE-YEAR AVERAGE YIELDS OF GRAIN SORGHUM HYBRIDS ENTERED IN THE AREA D3 TRIALS AT BROOKINGS, 1963-1967

Variety	Average yields, pounds per acre			
	1963-67	1964-67	1965-67	1966-67
DeKalb B-32			3910	4030
DeKalb DD-50				3380
NK 115				4360
NK 125	4530[a]	a	4060	4550
NK 133		4170	3910	3990
NK 222	3850	3230	3270	3230
Paymaster Pawnee			4070	4350
T-E 44		3860	3890	4270
T-E 44C				3520
T-E Grainmaster A				3250
RS 610	4180	3470	3350	3350
Nebr. 504			4230	4510
SD 441	4160	3860	3910	4300
SD 451	4450	4120	4110	4630
SD 503	4740	4140	3880	4070

[a] - Not entered in 1964

TABLE 16. 1967 GRAIN SORGHUM PERFORMANCE TRIAL, AREA E, SOUTHEAST RESEARCH FARM, BERESFORD

Variety	Height, inches	Percent moisture 9/20/67	Test Wt. lb/bu	Yield lbs/A	Statistical significance
T-E 44	50	28.9	54.0	7450	a
Nebr. 504	54	27.4	59.0	6470	b
SD 451	56	26.2	57.0	6440	b
DeKalb DD-50	52	35.1+	53.0	6110	bc
RS 610	53	35.1+	56.0	6080	bcd
SD 503	60	31.3	58.0	6000	bcde
NK 210A	51	35.1+	55.0	5980	bcde
T-E 44C	48	35.1+	60.0	5810	bcde
Frontier 370	49	27.8	53.0	5770	bcdef
Pioneer 883	47	30.2	57.0	5750	bcdef
NK 222	44	35.1+	53.0	5730	bcdef
Frontier 401	45	35.1+	56.0	5710	bcdef
Pioneer 885	48	32.8	58.0	5700	bcdef
Rudy-Patrick RP 212	49	33.3	56.0	5690	bcdefg
Paymaster R 102	50	32.0	56.0	5680	bcdefg
Pioneer 866	54	35.1+	56.0	5540	cdefgh
SD 441	60	17.9	57.0	5530	cdefgh
Advance AMAK-R10	49	35.1+	54.0	5300	cdefgh
T-E Grainmaster A	50	35.1+	54.0	5240	cdefgh
Advance 14	52	35.1+	47.0	5220	cdefgh
T-E Mucho	48	33.9	54.0	5210	cdefgh
NK X 4018	45	35.1+	55.0	5170	defghi
Pioneer 872A	48	35.1+	53.0	5100	efghi
Rudy-Patrick RP 180	49	33.3	56.0	4850	fghi
Frontier Super 400	47	35.1+	50.0	4820	fghi
Paymaster Ute	44	35.1+	58.0	4720	ghi
Frontier 375	44	26.6	47.0	4620	hi
Frontier 409	47	35.1+	45.0	4210	ij
DeKalb E-57	50	35.1+	47.0	3470	ijk
Pioneer 846	48	35.1+	45.0	3250	jkl
NK 222A	45	35.1+	45.0	2960	kl
Haapala BL-229	49	35.1+	52.0	2460	l
			Mean	5250	

C.V. = 9.4%

TABLE 17. TWO-, THREE-, FOUR-, AND FIVE-YEAR AVERAGE YIELDS OF GRAIN SORGHUM HYBRIDS ENTERED IN THE AREA E TRIALS AT BERESFORD, 1963-1967

Variety	Average yields, pounds per acre			
	1963-67	1964-67	1965-67	1966-67
DeKalb DD-50				6510
Dekalb E-57			3670[a]	
Frontier 401	4740[b]	4810[b]		6120
Frontier Super 400				5760
Frontier 375				5410
NK 222	4740	4870	5420	6060
Paymaster Ute		4160	4810	5600
Pioneer 846		4480	4780	5090
Pioneer 885				5970
T-E 44		5290	6230	7020
T-E 44C				5450
T-E Grainmaster A				6060
RS 610	5000	5100	5860	6540
Nebr. 504	5350[c]		5610	6130
SD 451	4640	4850	5640	6250
SD 503	4500	4500	5030	5470

[a] Not entered in 1966
[b] Not entered in 1965
[c] Not entered in 1964

TABLE 18. 1967 GRAIN SORGHUM PERFORMANCE TRIAL, AREA B3, RANGE FIELD STATION, COTTONWOOD

Variety	Height, inches	Test Wt. lb/bu	Yield lbs/A
T-E 44	31	50	1510
Sokota 510	36	50	1480
Nebr. 504	38	52	1320
NK 210A	32	51	1190
RS 610	38	48	1180
Haapala BL-101	37	50	1140
Advance 19	34	54	1130
DeKalb DD-50	35	51	1130
SD 451	37	54	1100
T-E Grainmaster A	34	54	1050
SD 441	42	52	1030
Paymaster Ex 1036	36	51	1030
Pioneer 894	32	52	1010
NK 120	34	51	1000
SD 503	42	55	950
Frontier GX 482	36	45	940
Pawnee	37	54	930
Frontier Super 400	34	51	890
Frontier 370	33	52	790
Pioneer 885	34	47	700
Frontier GX 625	36	52	700
Frontier GX 402	32	52	680
NK 133	38	53	670
NK 125	33	50	670
T-E Mucho	33	51	650
Advance 22	37	52	620
Paymaster R 102	34	43	590
T-E 44C	34	53	480
NK 222	31	51	450
		Mean	930
			N.S.

C.V. 37.9%

TABLE 19. 1967 GRAIN SORGHUM PERFORMANCE TRIAL, AREA C2, MAYNARD BRIDGES FARM, GEDDES

Variety	Height, inches	Percent moisture 9/20/67	Test Wt. lb/bu	Yield, lbs/A 1967	Yield, lbs/A 1966-67
T-E Mucho	40	27.4	54	4600	
RS 610	39	22.8	54	4550	4830
Pioneer 866	43	22.8	57	4430	
Sokota 510	42	24.0	57	4360	4920
Rudy-Patrick RP 180	42	27.9	52	4340	
SD 503	46	16.6	58	4240	4660
T-E Grainmaster A	38	22.6	57	4110	5270
NK 120	39	15.4	56	4080	4220
Paymaster R 102	42	23.1	55	4060	
NK 125	42	17.7	56	4040	4040
Nebr. 504	41	15.6	59	3920	4410
Pioneer 883	39	22.2	44	3880	
Pawnee	44	13.4	60	3850	4920
Frontier 370	41	32.5	43	3830	
Pioneer 885	39	24.1	53	3790	4520
NK 222	38	23.4	56	37.7	4340
NK 222A	40	35.1+	50	37.6	
DeKalb E-57	40	29.2	49	3750	
T-E 44	38	26.8	51	3740	4310
Pioneer 872A	37	24.0	54	37.3	4710
Frontier Super 400	39	23.9	41	3700	
Frontier GX 402	38	29.6	56	3690	
DeKalb DD-50	40	33.2	54	3660	4630
Ute	37	35.1+	58	3590	4430
Paymaster R94	39	14.5	58	3570	
Frontier 375	37	30.3	44	3570	
NK 133	38	18.9	57	3440	3910
T-E 44C	39	15.0	59	3400	3830
SD 451	43	18.0	58	3190	3690
SD 441	47	12.8	56	2880	
Frontier GX 625	37	17.9	58	2770	
Frontier 409	36	35.1+	40	2660	
			Mean	3780	
				N.S.	

C.V. - 18.1%

TABLE 20. ENTRIES SUBMITTED FOR THE 1967 GRAIN SORGHUM PERFORMANCE TRIALS AND TABLES WHERE THE RESULTS APPEAR

Company	Variety	Tables
Advance Seed Company	Advance 14	16
	Advance 19	8,18
	Advance 22	8,9,18
	AMAK-R10	16
DeKalb Agric. Assn., Inc.	A-25	4,6
	B-32	4,5,6,7,10,11,12,13,14,15
	DD-50	8,9,10,12,14,15,16,17,18, 19
	E-57	16,17,18
Frontier Hybrids Incorporated	400C	14
	401	14,16,17
	375	10,11,14,16,17,19
	GX 625	8,14,18,19
	370	4,5,8,19,14,16,18,19
	Super 400	4,5,6,7,8,9,10,11,14,16, 17,18,19
	409	16,19
	GX 402	4,6,8,14,18,19
	GX 482	4,6,8,14,18
Levi Haapala and Sons, Inc.	BI-101	4,6,8,10,12,18
	BI-105	14
	BI-228	16
Northrup, King & Company	NK 115	4,5,6,7,10,11,12,13,14,15
	NK 120	4,5,6,7,8,9,10,12,13,18,19
	NK 125	4,5,6,7,8,9,10,11,12,13,14, 15,18,19
	NK 133	4,5,6,7,8,9,10,11,12,13,14, 15,18,19
	NK 222	8,10,11,14,15,16,17,18,19
	NK 210A	8,10,16,18
	NK 222A	16,19
	NK X4010	10,12,14
	NK X4013	10
	NK X4018	10,16
Paymaster Seed Farms	Pawnee	4,5,6,7,8,9,10,11,12,13,14,15, 18, 19
	Ute	10,11,16,17,19
	R 102	8,10,14,16,18,19
	R 94	4,6,19
	Ex. 1036	4,6,8,12,14,18
Pioneer Hi-Bred Corn Company	846	16,17
	885	4,5,6,7,8,9,10,11,16,17,18,19
	872A	16,19
	866	16,19
	883	16,19
	894	4,6,8,10,11,16,17,18,19
	X-5848	4,6,10,12,14
Rudy-Patrick Seed Co.	R.P. 180	16,19
	R.P. 212	16
Sokota Hybrid Producers	510	4,6,10
	445	8,18,19
Taylor-Evans Seed Company	T-E 44	4,5,6,7,8,9,10,11,12,14,15, 16,17,18,19
	T-E 44C	4,5,6,7,8,9,10,11,12,13,14, 15,16,17,18,19
	Grainmaster A	8,10,11,14,15,16,17,18,19
	Mucho	8,10,14,16,17,18,19
South Dakota Argicultural Experiment Station	RS 610	4,6,8,9,10,11,14,15,16,17, 18,19
	Nebr. 504	4,5,6,7,8,9,10,11,12,13,14, 15,16,17,18,19
	SD 102	4,6,8,12,14
	SD 441	4,5,6,7,8,10,11,12,13,14 15,16,18,19
	SD 451	4,5,6,7,8,9,10,11,12,13,14, 15,16,17,18,19
	SD 503	4,5,6,7,8,9,10,11,12,13,14, 15,16,17,18,19